Electrical World

News Issue

FEBRUARY 22, 1947

Col. William Kelly, center, New Chief of the Public Utilities Section of the Military Government for Germany, with His Predecessors, Cornelius DeForest, left, and Walker L. Cisler

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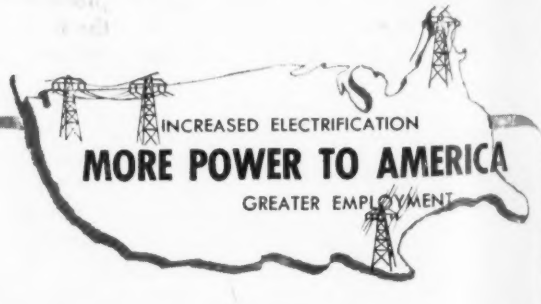

A DEFINITION—*An organized program for applying, most effectively, the co-ordinated efforts of all interested groups to increase the efficient use of electricity in industry and agriculture, with emphasis on those processes and operations least electrified.*

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ELECTRICAL WORLD

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NEWS ISSUE

FEBRUARY 22, 1947

G.E. Atomic Research Plans Delayed by Fight Over AEC

Vice-President Winne Urges Quick Confirmation of Entire Atomic Energy Commission—Vice-President Barnard of New Jersey Bell also Supports Lilienthal and His Colleagues

GENERAL Electric Co.'s atomic research program—including development of an atomic-electric power plant at its Knolls laboratory—has been stalled by the delay in confirmation of the five members of the Atomic Energy Commission.

This was the high spot of testimony this week, the fourth in the drawn-out hearings by a Senate Committee on confirmation of Chairman-Designate David E. Lilienthal and his four colleagues on AEC.

It was delivered by Harry Winne, G. E. vice-president, a witness who also rejected allegations of Communism against Lilienthal and urged vigorously that the former TVA chairman be confirmed, along with his colleagues. Winne was joined in this position by Chester I. Barnard, vice-president of the New Jersey Bell system. Both served with Lilienthal in developing last year's Acheson-Lilienthal report on international control of atomic energy.

Their testimony highlighted a series of pro-Lilienthal developments. President Truman rejected the possibility of a White House withdrawal by telling a press conference he was backing Lilienthal all the way. Other witnesses before the Senate Committee repudiated the charge that Lilienthal is a Communist.

Winne's testimony took the form of rebuttal to many complaints voiced during the preceding three weeks. It included a defense of the Acheson-Lilienthal report and a flat rejection that Lilienthal is either domineering or opposes private enterprise.

"My feeling is that this is a good commission," he added. "It is my strong recommendation that this commission be confirmed so that development of atomic energy may proceed without undue delay."

Barnard said that several weeks before the AEC nominations were made he discussed the matter with President Conant of Harvard. He said Conant asked him who could fill the job, and he replied that "the only name that occurs to my mind is that of David Lilienthal."

Barnard said he told the Harvard president:

"There are very few industrialists that I know that would be competent to do it. And yet, it is essentially an industrial type job. But they would not know how to behave effectively in such a type of public relations situation as this involves. In addition to that, I have read the (McMahon) Act, and I think it would be almost impossible for most industrialists to extricate themselves from their interest sufficiently to properly perform such a job. . ."

Barnard also testified that he had obtained a very favorable impression of Lilienthal during their association on the Acheson-Lilienthal board. He said he had expected to find Lilienthal to be a "state socialist" but concluded on the basis of personal contacts that "Mr. Lilienthal was about the greatest individualist that I had ever met."

Bill to Amend Reclamation Project Act Introduced

Interior Department power to authorize Reclamation projects is transferred to Congress in a bill introduced by Rep. Robert Rockwell, Colorado Republican.

It would amend the Reclamation Project Act of 1939 to require Interior to follow clearly defined procedures in calculating amortization of the government's investment in proposed projects. Interior would investigate projects and report to the President and Congress, a procedure similar to that prescribed for the Chief of Engineers in making flood control and navigation surveys.

The Rockwell Bill, scheduled for hearings within two weeks, and an identical proposal introduced by Sen. Hugh Butler, Nebraska Republican, represent the second Congressional effort to set aside an interpretation of the 1939 act by former Interior Solicitor Fowler Harper. Harper's opinion contended that power revenues need not be sufficient to amortize investment in power equipment so long as interest thereon was paid throughout the life of the plant. It also held that interest on the power investment might be applied against irrigation costs allocated for repayment by power revenues. Legislation to nullify this concept was studied last year. Interior spokesmen opposed it strongly as Reclamation now opposes the Rockwell bill.

Under the Rockwell bill, irrigation features should produce sufficient revenues to cover cost of operation and maintenance, to maintain a replacement reserve and to repay a portion of the irrigation investment, without interest for 50 years and with interest at 2 percent thereafter.

Estimates of power costs would include charges for maintenance opera-

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tion, establishment of a replacement reserve, and amortization of the power investment within 67 years or the useful life of such features, plus interest at 2 percent. Power revenues also would bear a portion of the irrigation costs, without interest, for 50 years. The Secretary of Interior "shall not apply the interest paid or payable on the construction cost of commercial power facilities to the repayment of any portion" of the irrigation cost.

Power rates should be fixed on a basis "which afford to irrigation the maximum benefits compatible with the cost of generation of electric power within the area served by the project when such electric power is or could be generated by the most efficient or least expensive available method." Thus, power rates would be no lower than those of any modern and efficient plant which was, or could be, established in the area. Furthermore, the area would apply to energy transmitted into high-production-cost areas from such regions as the Columbia Basin where generating costs are extremely low.

Another bill set for early hearings by the same body has been introduced by Rep. Robert F. Jones, Ohio Republican. It would return to the U. S. Treasury, instead of the Reclamation fund, all revenues from reclamation projects financed by general funds.

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Sabotage Follows Strike of Missouri Co-op Group

The Co-Mo Electric Cooperative, Tipton, Mo., is the latest REA co-op to become a victim of labor troubles. Recently, for the third time this year, service to the co-op's 400 customers was interrupted when vandals sawed through three poles and dropped two of them with their lines.

The sabotage followed a strike of seven co-op employees to gain recognition for their union, the International Brotherhood of Electrical Workers, A. F. L. However, Athur Nelson, assistant manager of the co-op, said he had no proof that the strikers were responsible.

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Heads Georgia Power Co.

Preston S. Arkwright, Jr., has been named president of the Georgia Power Co., Atlanta, succeeding William E. Mitchell, who has resigned, having reached the retirement age. Eugene A. Yates has resigned as chairman of the board. Arkwright has been one of the company's attorneys for 20 years.

Utilities Reveal Coal-Saving Methods Used During Strikes

System Voltage Reduction, Interconnections with Companies Having Sufficient Fuel, and Conversion from Coal to Oil or Gas Enabled Utilities to Operate while Mines Were Shut

THREE OPERATING TECHNIQUES practiced by electric utilities during the two major soft coal strikes last year were instrumental in conserving fuel and insuring continuous electric service to the northeastern United States, it was revealed in Baltimore last week.

These techniques consisted of load control through system voltage reduction, the transmission of energy over interconnections from areas with ample coal reserves to those where coal was scarce, and emergency conversion of boiler firing to fuels other than coal.

Results of these operating methods were described at a meeting of the Systems Operation Committee of the Pennsylvania Electric Associaton. Nearly 100 system operating officers from major electric utilities in Pennsylvania, New Jersey, Delaware, Maryland, New York, and New England attended.

6,000 Tons of Coal Saved

Under the stress of harbor and coal strikes in March, April, and May, 1946, Philadelphia Electric Co. was forced into an emergency conversion from coal to oil at its Richmond, Chester, Deepwater and Schuylkill stations. As a result of this conversion, in May, approximately 60 percent of the normal burn, about 6.000 tons of coal daily, was replaced with oil, W. C. Astley disclosed.

During April, before conversion, 80,000 tons of coal were reclaimed from storage in 25 days, he reported. But as a result of the conversion, tons of coal in storage during the November-December coal strike remained virtually constant through 25 days.

A symposium discussion prepared by A. C. Hartranft, Philadelphia Electric, revealed that by reducing voltage 2 percent on generator and substation buses during the coal strike period of May 8 to 14, the company saved 2,500,000 kw.-hr., or the equivalent of 1,600 tons of coal per week.

In late December, 1946, removal of a unit at Burlington station for maintenance necessitated dropping voltage on the Pennsylvania-New Jersey interconnection every night for three weeks. At first, voltage was dropped 3 percent by all members of the pool. This reduction proved more than necessary. As a compromise, a different pool member was called to drop voltage each night, in rotation. Thus, the necessary reduction was achieved, with all members dropping loal equally.

Experience in this operation was surprising to participants, who had forecast a reduction of 1 percent in load for every 1 percent drop in voltage. The load reduction proved nearer 1½ percent for each 1 percent drop in voltage, H. W. Phillips, supervisor of the Pennsylvania-New Jersey interconnection disclosed. One New York state system reported, during the symposium in voltage reduction, that it had established a plan for automatic reduction of system voltage by 5 percent whenever frequency fell below 59.6 cycles.

Least effective method for relief of fuel shortage on specific system interconnections seemed to be the transfer of fuel as energy from areas of ample coal stocks into those where stocks were depleted. J. A. Rose, Public Service Electric & Gas Co., Newark, reported that during the April-May coal strike, transfer of energy to the Philadelphia area over Pa.-N.J. interconnections represented about 75,000 equivalent tons of coal, about 50 percent of which was generated by oil. He concluded, however, that while tie lines can be of great assistance for short periods to take care of forced outages, the amount of fuel that can be transferred through transmission interchange is insignificant, even when lines are fully loaded. Physical transfer of coal by freight or barge is far more economical. but there is nothing like having sufficient coal in storage piles.

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I.B.E.W. Loses Election

Carolina Power & Light Co. employees in certain job classifications recently rejected, 229 to 146, the International Brotherhood of Electrical Workers as a bargaining agent. In a separate election, also conducted by the National Labor Relations Board, foremen rejected the union, 60 to 17.

Distribution and Right-of-Way Problems Discussed by E.E.I.

Transmission & Distribution Committee at Atlanta Studies Philosophies of Distribution Patterns and Raised Voltage Benefit, Right-of-Way Clearing, High Voltage Cable Advances

MECHANIZATION and chemical sterilization methods of right-of-way clearing and a resumé of advances in the high voltage cable art comprised most of the transmission topics on the program of the E.E.I. Transmission and Distribution Committee at Atlanta, February 10-12.

Information about various approaches to comfortable adequacy of distribution systems was pooled. It showed sustained appeal of the unit substation and increasing appeal of voltages in the 13-kv. bracket for primaries. A half-day was spent by the 170 registrants in joint session with the equipment group.

Effective use of mechanical devices for clearing right-of-way was emphasized by Carl Asplundh, Asplundh Tree Expert Co., as a logical answer to tripled manpower costs. His movie showed time and money saved with dozers, chain saws, brush hoggers and harrows.

Chemicals Prove Satisfactory

Lloyd F. Hunt told of successful use by Southern California Edison Co. of borates in soil sterilization. Costs were about 3 cents per square yard. West Penn Power Co., according to J. S. Maloy, has treated 175 acres (1947 program, 3,000 acres) with Dow Chemical's 2-4-D at 1½ cents per square yard. It deters erosion by saving the grasses, and kills practically everything else but maples, oaks or berry bushes.

Residents along Pennsylvania Water & Power Co. transmission routes have been marshalled to report ice formation, brush fires, snipers, and other impediments to good service. According to E. S. Mathers, a calendar with patrolmen's telephone numbers, coupled with personal visits and a fitting emolument for reports, is all that is necessary to get advance news of troubles.

Ten companies detailed their current philosophies in a distribution symposium. High points were E. V. Sayles', Consumers Power Co.. admonition not to "sell the radial feeder short;" G. E. Dean's explanation of the Public Service Electric & Gas Co., Newark, program of applying unit substations as well as custom built designs; and Cincinnati's 15-point conclusions of an overall system plan committee, detailed by H. W. Grate on behalf of W. R. Weise.

Trend toward higher distribution voltages was evidenced by the Long Island Lighting Co. decision, reported by H. J. DeBaun, to effect transition to 13 kv. with maximum retention of present facilities. L. D. Cronin summarized "Ebasco" property movements in the same direction to meet the undoubted insufficiency of prevailing 4-kv. systems. Significant strides in low-voltage network techniques were J. E. McCormack's mention of the limiter applications and emergency restoration procedures set up by Consolidated Edison in New York.

Network transformers and protectors constitute some 11 percent of network investment on the Public Service Electric & Gas system, and the simplifications mentioned by J. A. Pulsford are expected to be beneficial. He said street lighting should swing to multiple and would do so if an inexpensive but good light-relay were available for individual lamps. On that system, 4-kv. distribution looks good for another decade.

Contributions by cable manufacturers marked the symposium, designed to acquaint committee members with wartime progress in high-voltage cables. The gas compression cable was upheld by W. A. DelMar, Habirshaw, for its simplicity and absence of both hydrostatic head and pressure lag. G. B. Shanklin, General Electric Co., decried the multiplicity of designs and looked toward a single design for duct use and another for pipe-type jobs. Copper, he said, can be a determining cost factor among varying thermal resistivities.

R. J. Wiseman reviewed the progressive acceptance of Okonite's Oilostatic from its introduction in 1929 because, he said, it assures maintenance of the saturation in the paper insulation. A. B. Pettee gave General Cable's philosophy about improved stability of power factor of refined but unsaturated oils. L. F. Hickernell, Anaconda, iterated briefly the carbon-black shielding and F3 lead-alloy sheath developments along with substantiating cyclic tests.

Meanwhile the 120-kv. gas-filled cable installed in Detroit has had no electrical failure, no gas leaks in the pipe portion. and only three repairs to the Somastic coating. L. F. Komives did report use of 857 tanks of nitrogen over five years to replace gas lost at termination equipment. Maintenance is now running at ½ percent annually.

Cleveland Electric Illuminating has devised a "paper" system which, according to H. C. Bingham, systematizes the technique of data-taking and decision so that non-technical employees can specify appropriate secondary circuits.

A fault-locator for open wire circuits, primary or secondary, either grounded or ungrounded, was described by Stephen Freeman, of Consumers Power. It functions on capacitor accentuation of fifth harmonic and detection by search coil and amplifier. Details will appear in these pages later.

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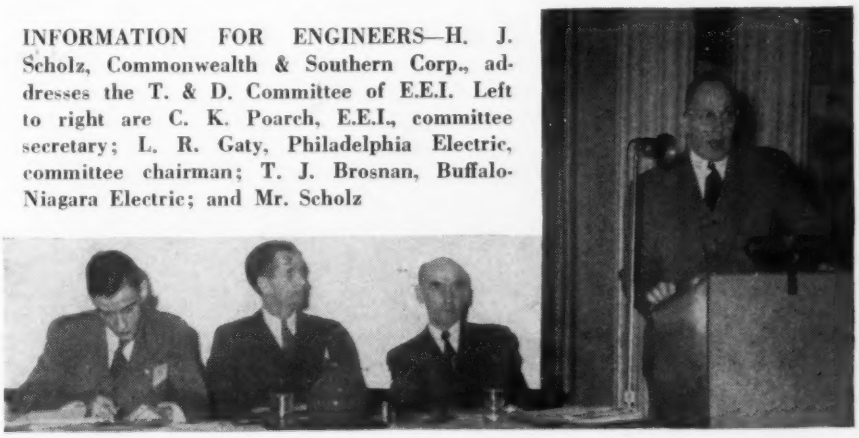
20,000-Kw. Unit Planned

Scranton (Pa.) Electric Co. has announced a $5,000,000 expansion program. Most of the money will be spent for construction at the utility's suburban plant at Scranton where a 20,000-kw. hydrogen-cooled turbo-generator and auxiliary equipment will be installed.



INFORMATION FOR ENGINEERS—H. J. Scholz, Commonwealth & Southern Corp., addresses the T. & D. Committee of E.E.I. Left to right are C. K. Poarch, E.E.I., committee secretary; L. R. Gaty, Philadelphia Electric, committee chairman; T. J. Brosnan, Buffalo-Niagara Electric; and Mr. Scholz

METER COMMITTEEMEN—Members of the meter committees of the Edison Electric Institute and the Association of Edison Illuminating Companies at the Newark plant of Westinghouse Electric Corp. during their recent joint meeting

Meter Famine Hampering Utility Company Operations

Post-war production of watthour and other billing meters and their associated equipment is still far behind demand. This situation, made more difficult by other post-war shortages, is hampering the operations of utility meter departments considerably, according to reports and discussions of the joint meeting of the meter committees of the Edison Electric Institute and the Association of Edison Illuminating Companies, at Newark, February 10-12.

Topics ranged from consideration of codes and regulatory practices to meter design details. The committees have a program of revising specifications on service entrance cable, meter sockets, service devices, terminal blocks, high voltage installations, switchboard and flush-mounted meters. Several of these are developing jointly with other engineering committees of the parent associations, and with other interested industry groups.

Much discussion centered on the so-called "universal" watthour meter register and its incorporation into indicating and cumulative demand metering. Instead of a variety of gear ratios in registers to make scales and dials direct reading, the idea is to use a single gear ratio in all registers and to employ multipliers to arrive at power and energy quantities. This was asserted by some—and disputed by others—to reduce costs and to simplify meter department operations, although complicating accounting and billing department work. There was no agreement on what constitutes a "universal" register. The consensus was that the subject requires much more exploration and development before any conclusion could be reached.

First indications from an investigation into corrosion, recently started, are that this is less a trouble to watthour meters than to their associated equipment. No proposals or recommendations were offered by the subcommittee because insufficient data are available for more than recognition of corrosion as a real problem.

With growing residential loads, capacities and adequate protection of branch circuits are emerging as subjects to be considered in possible practice revisions. There will be a revised edition of the "Electric Meterman's Handbook," but final determination of content is not yet made.

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Col. Kelly Takes Up Duties as German Utilities Head

(See Front Cover)

Col. William Kelly, new chief of the Public Utilities Section, Industrial Branch, Office of Military Government for Germany, has arrived in Berlin to take up his duties. Before leaving Washington, the new appointee conferred with his two predecessors, Walker L. Cisler, Detroit Edison Co., and Cornelius De Forest.

The latter, who had just returned from Berlin, indicated that Col. Kelly was assuming a difficult task. The German utility systems were damaged during the war by artillery fire and bombing, they are badly rundown from lack of maintenance, and are constantly short of coal. Fuel is widely unavailable because of manpower and machinery shortages, lack of transportation to haul it, and extremely frigid weather which makes strip mining impossible.

De Forest said conditions in the American Zone are better than elsewhere, especially since the British and Americans have integrated their power systems and economic resources. Further progress was made January 1, when these two nations turned over the operation and maintenance of power and other utility facilities in their zones to a carefully selected group of German engineers.

Rep. Stockman Demands Raver Quit as BPA Head

Congressman Lowell Stockman, member of the House Appropriations Committee, is pushing his demand for the resignation of Paul J. Raver as Bonneville Power Administrator.

The Oregon Republican asked that Raver be dismissed "immediately" in a letter to Interior Secretary Krug last week following a subcommittee hearing on Interior appropriations. Though the hearing was closed and neither Stockman nor Interior officials would comment thereon, it was apparent that he and Raver had disagreed over some phases of the latter's testimony on Bonneville's budgetary requests or operating procedures.

At Yakima, Wash., Interior Secretary Krug, informed of Stockman's request, said he wanted to assure the Congressman that "any information available to the Interior Department would be made available to his committee."

Stockman in his letter pointed out that "I have repeatedly heard that the Bonneville Power Administration had failed to furnish full information and give complete cooperation to members of the Interior subcommittee . . ."

After listening to two days of testimony by the BPA staff, he continued, "it is my opinion that the furtherance and development of the Bonneville Power Administration and consequently of the Columbia River will be highly retarded unless a change is immediately made in the position of the Bonneville Power Administrator.

"I therefore request, in the best interest of future development of the Columbia River, that you at this time ask for the resignation of Dr. Paul Raver, and that at your early convenience, you appoint a man to that position who will work for the sound development of the Pacific Northwest and cooperate with all government bodies entrusted with that responsibility."

Better Selection and Training of Personnel Helps Efficiency

E.E.I. Equipment Committee Told That Industry's Enviable Record of Service Due to Skill of Staffs Rather Than to Mechanical Refinements—Radio Frequencies Will Be Changed

OPERATING EFFICIENCY may be improved through enlightened programs for personnel selection and training and through programs of area improvements aimed at the best investment returns.

These were highlights at the Edison Electric Institute's Electrical Equipment Committee meeting at Atlanta, February 12 and 13. Other prominent topics included interconnection operation, mobile radio, distribution evolution, and control battery supervision.

Tremendous opportunities exist for benefiting from research and from scientific techniques in screening and training recruits for electric utility staffs, said Prof. M. S. Viteles, director of personnel for Philadelphia Electric Co. He urged E.E.I. to analyze presently uncorollated methods. He contended that skill and personality of such staffs, rather than mechanical refinements, have clinched the industry's enviable record of service. Aptitude tests supplement but do not supplant interviews. Their efficacy is demonstrable from Army, Detroit Edison, Philadelphia Electric, and other tests. It is important that supervisor's training methods be examined lest the apprentice be confused rather than assisted by conflicting instructions.

Frequency Change Coming

Practically every utility now using mobile radio systems will have to change to a new frequency when the FCC announces the allocated channels, said C. H. Underhill, Central Hudson Gas & Electric Corp. Meanwhile, all channel users are still uninformed regarding who moves where. It is imperative that power companies continue to provide competent members and talent for the RTPB so that competent and unanimous recommendations may be made to FCC.

Presently, however, the assiduous cultivation of commercial highway radio service is a serious threat to wave lengths now available to power companies. Insofar as demand for this service is established before FCC, there will be a corresponding threat to power companies existing allotments of channels for emergency communication. Underhill said the commercial service complete lack of priority makes it a poor one for power companies to substitute for private radio systems. Inability to reach a truck throughout a shift and inability to obtain contract for exclusive service were reported by J. E. McCormack, Consolidated Edison Co., New York.

Selective application of improvements in equipment and operating techniques was suggested by W. J. Lyman, Duquesne Light Co. Its necessity is emphasized by curent pressure for cost reductions and the realization that diminishing returns are likely to accompany expenditures for improved service reliability. Lyman sketched Duquesne's plan to correlate area improvements with customers' service needs.

Load Control Explained

Load control practices and general operating procedures of the Niagara-Hudson system, including the state-wide reliance on tie-line bias control were explained by B. S. Rice. Discussion brought out the resort to limit stops on feeder regulators to derive full 5 percent energy drop when bus voltages were dipped 5 percent during stringencies. A cam trips the limit switch at the highest point of functioning when system voltage is normal; otherwise the regulators will defeat the objective saving.

Too much tendency to minimize the "why" factor in discussions of substation connection schemes is probable, according to E. B. Shew, Philadelphia Electric Co. Current approach on this system is to ask critically why an item is needed at all, rather than to choose what perhaps can be eliminated. Disconnects and potential transformers are subjected to special scrutiny, as is the loss of simplicity that usually accompanies efforts to get "general feasibility," often unneeded.

A. M. McCabe outlined the Carolina Power & Light Co.'s operation and control batteries for small substations. He said battery cost is so small a fraction of station cost that better grades are readily justifiable. Pasted plates are preferred, and it has been found uneconomical to make extensive repairs to individual defective cells. Most batteries exceed estimated life by several years. R. T. Henry, Buffalo Niagara Electric Corp., spoke favorably of batteries with Plante positives and pasted negatives. S. C. Townsend said Pennsylvania Power & Light Co. had found no occasion since 1931 to resort to emergency lighting systems.

Commenting on R. O. Loomis' detailing of the system planning program by the Georgia Power Co.'s composite staff, L. F. Hunt said Southern California Edison Co. had found that 10 percent extra for fan-cooling is not justifiable if another 10 percent has to be paid for low impedance transformers to preserve system stability.

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Tests on 220-Kv. German Breaker Set for Feb. 22-23

Official tests on a 220-kv., 2,500-mva., AEG (German), free-stream, air-blast circuit breaker are to be made at J. D. Ross substation on the system of the Bonneville Power Administration on February 22-23. Their purpose is to ascertain the operating characteristics of the breaker while interrupting fault currents and line charging currents under conditions characteristic of the BPA 230-kv. system.

Tests will also present an opportunity to investigate the following supplemental problems:

1. Fault-arc de-ionizing time following the three-phase interrupting of the fault circuit.

2. Fault-arc de-ionizing time following the single-phase interruption of the fault. During this test the two unfaulted phases are maintained in an energized condition and by capacitive coupling with the faulted phase will prolong the flow of fault current for a limited period after the generator supply breaker has been opened.

3. Tests will be made on experimental 115-kv. fuses to determine their ability to interrupt fault currents of a circuit having a nominal line-to-ground voltage of 132 kv.

4. Test data on an experimental fault-current measuring device, the operating principle of which is based on magnetizing small links as the result of fault current flow.

5. Test data on an experimental fault locator designed to measure the time between successive reflections of the traveling waves produced during faults.

6. Miscellaneous data, including voltage regulator performance, relay performance, and the characteristics of certain quantities applied to relays.

Utility Petitions Rehearing by FPC of Clark Hill Plea

Savannah River Electric Would Construct Project Which Army Engineers Are Planning to Build

The Savannah River Electric Co. has petitioned the Federal Power Commission for a rehearing on its application to construct the Clark Hill flood control and power project on Georgia's Savannah River.

Shortly after the utility's petition was filed, the Army authorized its District Engineer's office at Savannah, Ga., to proceed with construction of the project. The Engineers previously had twice rejected bids for construction of the dam. Plans of both the Army and the utility call for a concrete dam and power plant 20 miles north of Augusta, Ga.

Last month (ELECTRICAL WORLD, January 18, Page 125), FPC dismissed the company's application on the grounds that the Clark Hill project was being built by the Engineers in accordance with previous recommendations by the commission for federal development of the river.

Savannah River Electric, a subsidiary company of the Georgia Power Co., contended in its petition for rehearing that "each and all" of the findings contained in FPC's dismissal order were "contrary to law and contrary to the evidence presented" in the proceeding.

The company also objected to FPC's statement that the Engineers were proceeding with the project "as authorized for construction by the United States in the Flood Control Act of 1944." The 1944 Act authorized a project which would cost $35,300,000, but "the uncontradicted evidence is that a project such as that proposed by the applicant and as presently contemplated by the Army Engineers will cost $45,000,000 or more."

The latter cost being 25 percent in excess of the expenditure authorized by Congress, continuation of work on the project by the Engineers, "in the absence of (new) Congressional authorization would be unlawful."

In addition, the petition asserted that FPC "overlooked" 1. The company's plans for "comprehensive development of the Savannah River as recommended by the commission" in its original report on the project to Congress; 2. That these recommendations of FPC "did not purport to exclude a private company" from building the reservoir so long as comprehensive development of the river was not interfered with; 3. That such exclusion, even if intended, "would have been unlawful;" 4. That FPC "could not constitutionally recommend and the Congress could not constitutionally authorize" construction by the federal government of a project intended primarily (95 percent) for power and only incidentally for flood control and navigation; 5. That "nothing in the Federal Power Act" or other laws required dismissal of Savannah River Electric's application on the grounds advanced by FPC.

There was no indication this week as to how soon the Commission would act on the petition of the utility company, nor was there any official statement by the Army Engineers.

MEETINGS

Rural Electrical Contractors Association—Annual Convention, Roosevelt Hotel, New Orleans, March 13-15. J. W. Foster, executive secretary, 70 East 45th St., New York 17, N. Y.

Southeastern Electric Exchange—Annual Conference, Vinoy Park Hotel, St. Petersburg, Fla., April 3-5; Home Service Conference, Thomas Jefferson Hotel, Birmingham, Ala., May 13-14. J. W. Talley, executive secretary, 303 Haas-Howell Building, Atlanta 3, Ga.

National Association of Corrosion Engineers—Annual Conference and Exhibition, Palmer House, Chicago, April 7-10. A. B. Campbell, secretary, Southern Standard Building, Houston 2, Tex.

Northwest Electric Light & Power Association—Engineering and Operation Section, Multnomah Hotel, Portland, Ore., April 9-11; Business Development Section, Olympic Hotel, Seattle, Wash., May 7-9. Berkeley Snow, executive secretary, 418 Spalding Building, Portland 4, Ore.

Electrochemical Society—Spring Congress, Hotel Brown, Louisville, Ky., April 9-12. Colin G. Fink, secretary, 3000 Broadway, New York 27, N. Y.

Previously Listed

American Society for Testing Materials—Spring meeting and committee week, Benjamin Franklin Hotel, Philadelphia, Pa., February 24-28.

National Adequate Wiring Bureau—Annual Adequate Wiring Forum, Hotel Stevens, Chicago, February 27-28.

American Society of Mechanical Engineers—Spring meeting, Mayo Hotel, Tulsa, Okla., March 2-5.

National Electrical Manufacturers Association—Spring meeting, Edgewater Beach Hotel, Chicago, March 3-5.

Canadian Electrical Association—Western conference, Hotel Vancouver, Vancouver, B. C., March 3-5.

Institute of Radio Engineers—National Convention, Hotel Commodore, New York, March 3-6.

Radio Engineering Show—Grand Central Palace, New York, March 3-6.

Oklahoma Utilities Association—Annual convention, Tulsa Hotel, Tulsa, Okla., March 20-21.

Southeastern Electric Exchange—Spring conference of the Engineering and Operation Section, Sheraton Bon Air Hotel, Augusta, Ga., March 20-21.

Midwest Power Conference—Palmer House, Chicago, March 31-April 2.

Edison Electric Institute—Annual Sales Conference, Edgewater Beach Hotel, Chicago, March 31-April 3.

SEC RULINGS

The Securities and Exchange Commission recently issued a series of orders affecting electric utility companies.

INTERSTATE POWER CO.'s amended reorganization plan has been approved by the commission. Simultaneously the commission announced it had applied to the Federal District Court in Wilmington, Del., for an order enforcing the program. Commission has previously approved the plan subject to certain modifications, which the company filed. (Release No. 7143 and 7159).

GAS & ELECTRIC ASSOCIATES' liquidation plan has been approved. Gas & Electric Associates is a subsidiary of the General Public Utilities Corp. The plan eliminates all the parent company's interest in certificates of beneficial interest in, and notes payable of, Associates. (Release No. 7163).

NEW ENGLAND GAS & ELECTRIC ASSOCIATION'S alternative plan for recapitalization and settlement of intercompany claims has been approved by the commission in supplemental findings and opinion. The alternative plan provides for a new capitalization consisting of $22,425,000 of bonds, 77,625 shares of cumulative convertible $100 par value preferred stock, and 1,246,011 shares of $8 par value common stock. The program is subject to the approval of the Federal District Court in Boston, and Judge Francis J. W. Ford has set March 10 for a hearing. The settlement of claims provides for payment of $1,944,550 by New England Gas & Electric to Associated Gas & Electric Co. and Associated Gas & Electric Corp., now the General Public Utilities Corp., and certain subsidiaries, in consideration of which the $7 second preferred and common stocks of New England, all owned by the Associated interests, will be cancelled. The alternative plan provides for use of the proceeds from public sale of the bonds and new preferred stock to retire $34,998,500 of outstanding debentures at par plus accrued interest; the allocation of 766,776 shares of new common stock to holders of $5.50 preferred stock at the rate of eight new shares for one old, plus the right to subscribe to 479,235 new common shares at $9 each, or five for one. (Release No. 7181).

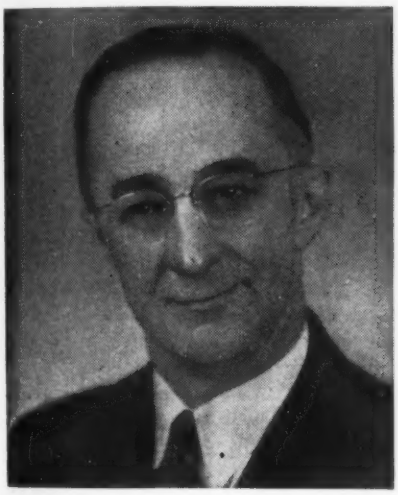
WEST TEXAS UTILITIES CO's request for a time extension to September 1 to comply with the commission's order of December 20, 1945, has been granted. The commission's order, among other things, required West Texas to interconnect the Big Bend electric properties purchased from Central Power & Light Co., a subsidiary of Central and South West Utilities Co., with its own electric properties. West Texas Utilities informed the commission that it was having difficulty in securing the necessary materials. (Release No. 7184).

MIDDLE WEST UTILITIES CO. OF CANADA, LTD. and its subsidiaries have received an extension of time until December 31, 1947, from certain specified portions of the Public Utility Holding Company Act. (Release No. 7200).

NEWS ABOUT PEOPLE

Leier Elected Vice-President of South Carolina Utility

Eugene Leier, for the past 15 years commercial manager of the South Carolina Electric & Gas Co., Columbia,



E. LEIER

S. C., has been elected a vice-president. Mr. Leier's wide experience in the utility and electrical merchandising fields include 15 years as assistant merchandising manager of the Brooklyn Edison Co., two years as assistant buyer for the electrical department of John Wanamaker, New York, and four years as merchandising supervisor for the Staten Island Edison Co. In 1932 he went to Columbia as commercial manager for what was then the Broad River Power Co.

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▶ RALPH E. CARGILL, formerly operating superintendent for the Beaumont division, has been named system operating superintendent for the Gulf States Utilities Co.

▶ LESTER GURNEY is now construction manager in charge of all construction activities of the New England Power Service Co. Mr. Gurney joined New England Power System as a resident engineer in 1918. In 1927 he became assistant to the chief engineer and was closely associated with all engineering and construction activities throughout the system. In 1945 Mr. Gurney was made executive assistant for the service company, working closely with former construction manager George Hewins, which duties he fulfilled until his recent appointment.

▶ ANDREW L. MCCRACKEN has been appointed to operate the dealer coordination department recently organized by the Southern Indiana Gas & Electric Co., Evansville, Ind. Mr. McCracken has been connected with the utility company since last September, serving on the appliance sales staff. He was formerly field representative of General Electric.

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W. W. Garey Named Manager of Electrical World

W. W. Garey, assistant manager of ELECTRICAL WORLD, has been appointed manager of that publication in charge of advertising sales and pro-

W. W. GAREY

motion, succeeding Malcolm S. MacNaught, who has resigned to open his own advertising agency.

Mr. Garey has been identified with ELECTRICAL WORLD since 1943 when he joined the advertising sales staff in Cleveland, serving in that capacity until January, 1946, at which time he was made asssitant manager of the publication with headquarters in New York. Prior to his affiliation with the ELECTRICAL WORLD staff, he spent two years in the research department of the McGraw-Hill Publishing Co.

Kime Assigned New Duties by California-Pacific Co.

The newly appointed vice-president of the California-Pacific Utilities Co., Elmer E. Kime, will have charge of electric properties servicing Baker, Union, Grant and Harney Counties in

E. E. KIME

Oregon; Oneida County, Idaho, and Lincoln County, Wyoming.

Mr. Kime moves to his new position after being manager of the company's eastern Oregon division, having assumed that position on July 1, 1946, at the time Cal-Pacific purchased the facilities of Eastern Oregon Light & Power Co. Before that time he had served as manager of the Needles, Calif., division.

Mr. Kime was operating manager of the West Coast Power Co., Portland, Ore., before joining Cal-Pacific.

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▶ SPENCER SWENSON has been appointed merchandise manager of the Otter Tail Power Co., Fergus Falls, Minn., to succeed the late Carl Johnson. Mr. Swenson will have charge of all merchandise sales and advertising. He has been connected with the company since 1924.

▶ JULIUS HALL, JR., commercial manager of the Bluefield division of the Appalachian Electric Power Co., Roanoke, Va., has been transferred to Roanoke to become commercial man-

ager of the company. L. L. KOONTZ, Bluefield division rural supervisor, has been transferred to Roanoke to become rural supervisor of the company.

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Fuller Made Vice-President of Shawinigan Utility

Announcement has been made of the election of J. A. Fuller to the position of vice-president of the Shawinigan Water & Power Co., Montreal, Que.

Mr. Fuller has been assistant to the

J. A. FULLER

president of the company since 1945. In addition, he is serving as vice-president of the Shawinigan Chemicals Limited.

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▶ ROBERT S. PEARE, vice-president of the General Electric Co., received from the National Association of Public Relations Counsel an award for his service in the field of public relations at a dinner held recently at the Hotel Plaza, New York. Mr. Peare, who directs public relations for General Electric, received the association's illuminated parchment certificate, declaring he had "done the most to improve the technique and application of public relations through top-flight proficiency from the professional standpoint, during the last year."

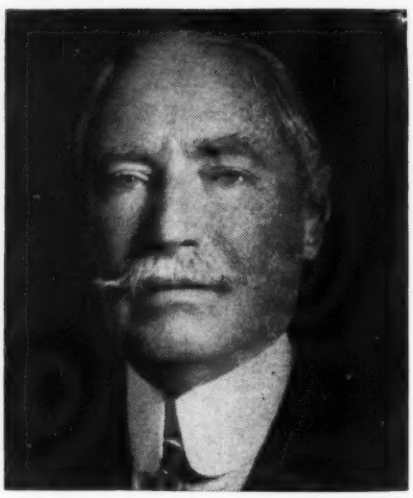
▶ ROBERT S. MCFARLANE, research and development manager for the Mississippi Power & Light Co., Jackson, Miss., has resigned. Mr. McFarlane has been associated with Mississippi Power & Light for more than 20 years. In his capacity as research and development manager for the power company, Mr. McFarlane has been prominently identified with the industrial and economic growth of Mississippi during recent years.

OBITUARY

H. Hobart Porter

H. Hobart Porter, chairman of the board of the American Water Works & Electric Co., whose death was announced in the February 15 issue of ELECTRICAL WORLD, page 96, had for many years been active in business, engineering and science, as well as in the educational and civic life of New York.

Mr. Porter was born in New York City and was graduated from the Columbia University School of Mines in 1886. He taught geology there for a year after graduation and then spent some years in Mexico, Arizona and other southwestern states to gain practical experience in mining engineering. After a connection with the Westinghouse Electric Corp., in 1894, with the late E. N. Sanderson, he founded the engineering firm of Sanderson & Por-



H. H. PORTER *Blank & Stoller 1937*

ter, from which he retired a few years ago after almost 50 years of active association.

His original role with what was to become the American Water Works & Electric Co., Inc., was that of consulting engineer retained by stockholders in its defunct predecessor, the American Water Works & Guarantee Co. They approved the reorganization plan proposed and elected Mr. Porter president of the new corporation formed in 1914, an office he held until 1937, when he was appointed chairman of the board. At the time of his death he was also chairman of the board of the West Penn Electric Co., which is controlled by American Water Works & Electric.

Mr. Porter was a member of the executive committee of the National Research Council in 1925 and 1926; a member of the division of engineering and industrial research of that organization from 1924 through 1926, and chairman of the Engineering Foundation from 1929 through 1932. Mr. Porter was a member of the board of trustees of the Edison Electric Institute and a member of the American Institute of Electrical Engineers, the American Institute of Civil Engineers and the American Institute of Mining and Metallurgical Engineers.

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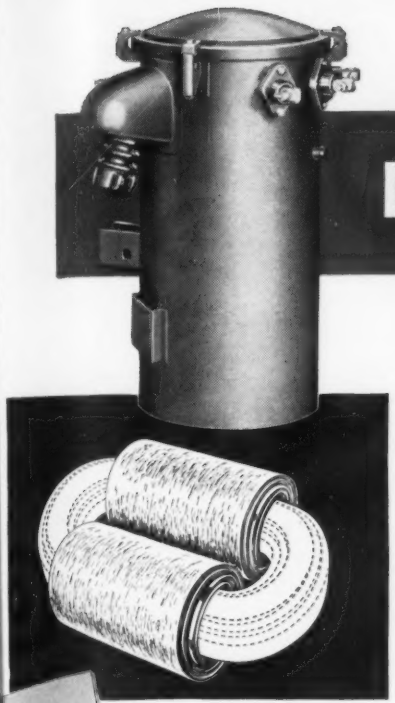
▶ LESTER J. NICHOLS, for 80 years an employee of the Malleable Iron Fittings Co., Branford, Conn., died in that city on January 30 after a brief illness at the age of 97. Born in Middlebury, Conn., Mr. Nichols joined the company as shipping clerk in 1866 and in 1901 was elected secretary. At the time of his death he was serving as secretary, assistant treasurer and a director.

▶ RICHARD M. ARMS, 75, superintendent of Seattle, Wash., City Light in 1910 and 1911, died January 30 in that city. He was graduated from the University of Wisconsin in 1894 with a degree in electrical engineering and moved to Spokane, Wash., in 1900, working for two years with the Spokane Power & Light Co. He had lived in Seattle since 1902, being associated with the Seattle Electric Co. until his appointment to City Light. He resigned the superintendency after two years to become an inspector for the Alaska Railroad, a position he held until his retirement several years ago.

▶ KARL G. BERGGREN, a vice-president of Thomas A. Edison, Inc., and manager of its special production division, died at West Orange, N. J., on February 13 after a brief illness. He was 55 years of age. Born in Sweden, Mr. Berggren came to this country in 1912 and received his education at Cooper Institute, Brooklyn Polytechnic Institute and Columbia University. He worked for several years for the Western Electric Co. and joined the Edison enterprises in 1927. It was in 1944 that he became a vice-president. Mr. Berggren was an associate member of the Edison Pioneers and a member of the A.S.M.E.

▶ CHARLES W. EASTWOOD, 64, executive vice-president and treasurer of the U. S. Gutta Percha Paint Co., Providence, R. I., died in that city on February 6. He joined the company as an office boy in 1898 and attained his late position in 1941. Mr. Eastwood was also treasurer of the company and a former vice-president of the National Paint, Oil and Varnish Association.

Why ROUND Coils on L-M Round-Wound Transformers



Line Material is outstanding for its development of an economical and efficient method for using round coils on smaller transformers. This method, L-M Round-Wound construction, is an exclusive L-M method of winding round coils directly onto a wound core. It is used on transformers from 1½ to 25 kva.

Round Coils provide

High average impulse strength. In winding round coils, insulation is uniformly distributed; coil is wound tightly and evenly, in its final shape; there is no need for malleting into shape with consequent danger of damage to insulation.

High short-time overload capacity. Round coils in core type construction provide more cooling surface; there is less danger of "hot spots" under heavy loads.

Low reactance, giving better regulation at all power factors.

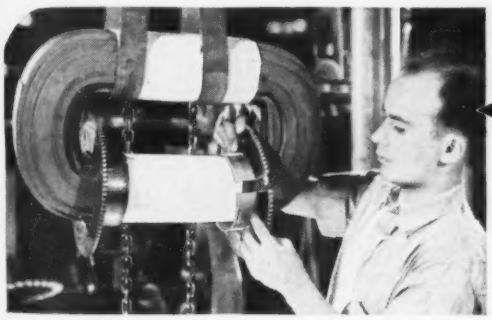
Longer transformer life. Under short-circuit currents, rectangular coils tend to assume a round shape; the forces may be violent enough to cause total failure. But *Round* coils are already round and short-circuit currents can produce very little distortion in them.

In addition to the advantages inherent in round coils, L-M Round-Wound construction provides many advantages, such as improved ratio of losses, low exciting current, good regulation, economical operation, low maintenance, and long life. It will pay you to investigate, to see why so many companies have standardized on L-M Round-Wound construction. Write for Bulletin 16-G-1, just off the press.

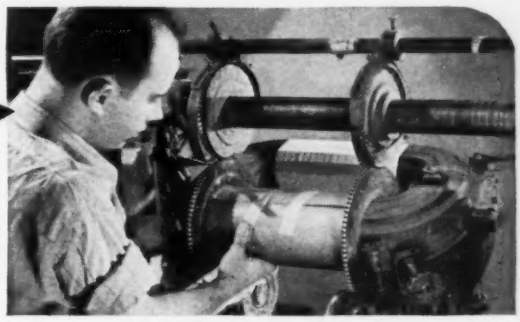
Write for Bulletin 16-G-1

Details on construction, specifications, accessories, tap changers, hangers, etc. Write Line Material Company, Transformer Division, Zanesville, Ohio.

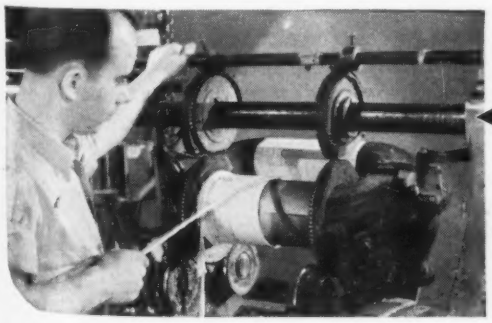
How We Wind the ROUND Coils onto the core



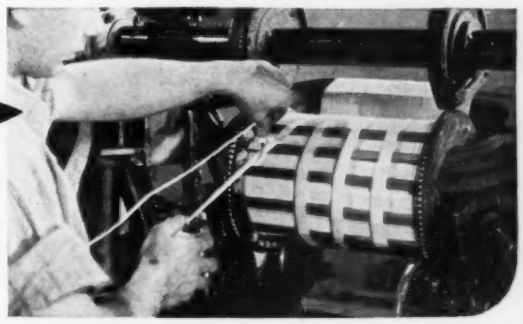
1 Split winding gears are placed around the taped core leg. These gears are rotated by driving gears on the winding machine. (Winding gears are removed after coil winding is completed.)



2 A tube of insulating paper is wound onto the flanges of the winding gears. This tube becomes part of the finished coil. Round coils are wound on this tube as it is rotated by the gears.



3 This simple method assures even tension, tight coils, utilizing the maximum value of the insulation without danger of damage from subsequent hammering to shape.



4 In the larger sizes, oil duct spacers are wound into the coils, to provide passages for additional cooling oil circulation, assuring freedom from hot spots.

L-M Round-Wound Transformers are made in sizes from 1½ to 25 kva, in all distribution class voltages including 14,400 volts; they meet EEI-NEMA standards.

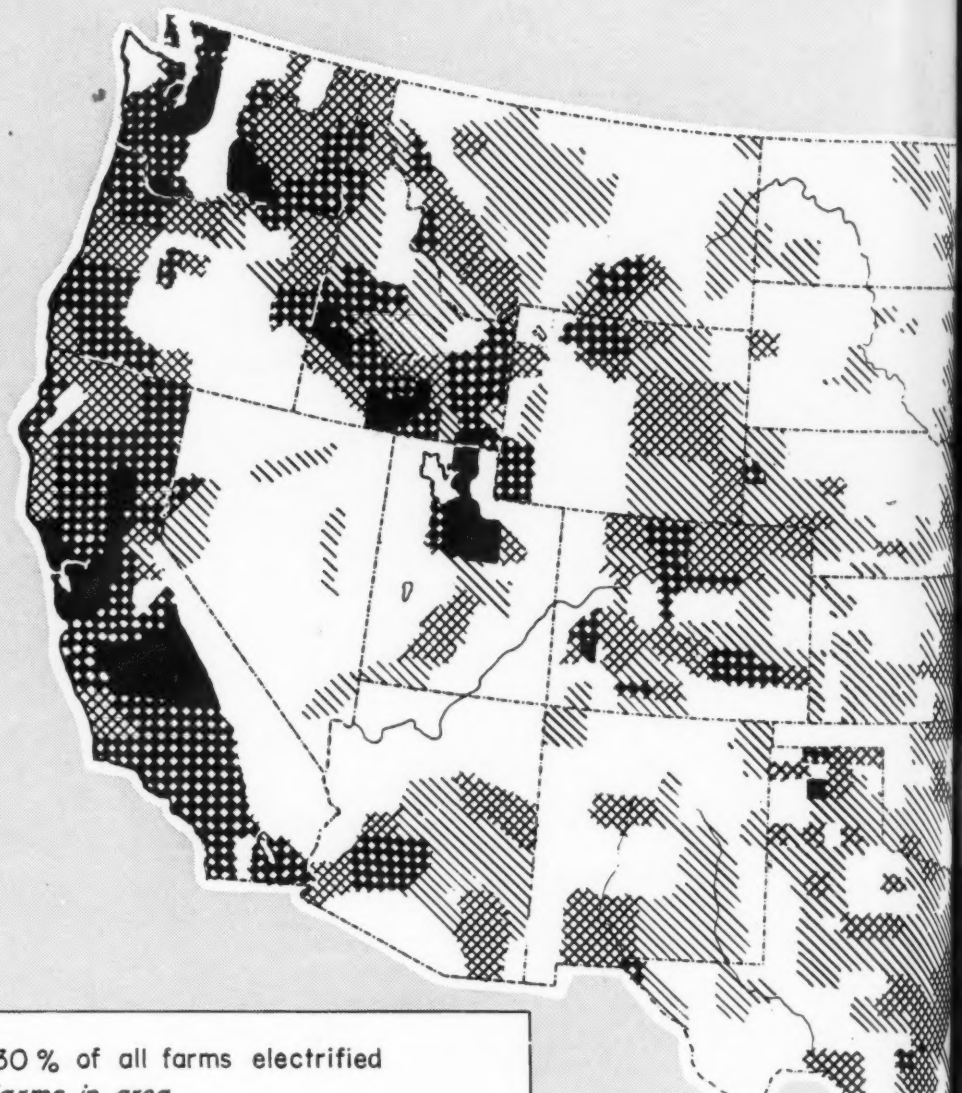
ROUND WOUND COILS CORE REG. U.S. PAT. OFF.

LINE MATERIAL TRANSFORMERS

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • Wired Radio Control Equipment • Capacitors

PROGRESS OF FARM ELECTRIF

Data from 1945 C



Fewer than 30 % of all farms electrified
or else no farms in area

30 % to 50 % electrified, 1/1/45
territory for future development

50 % to 70 % electrified, 1/1/45
line extensions to be completed 1/1/49

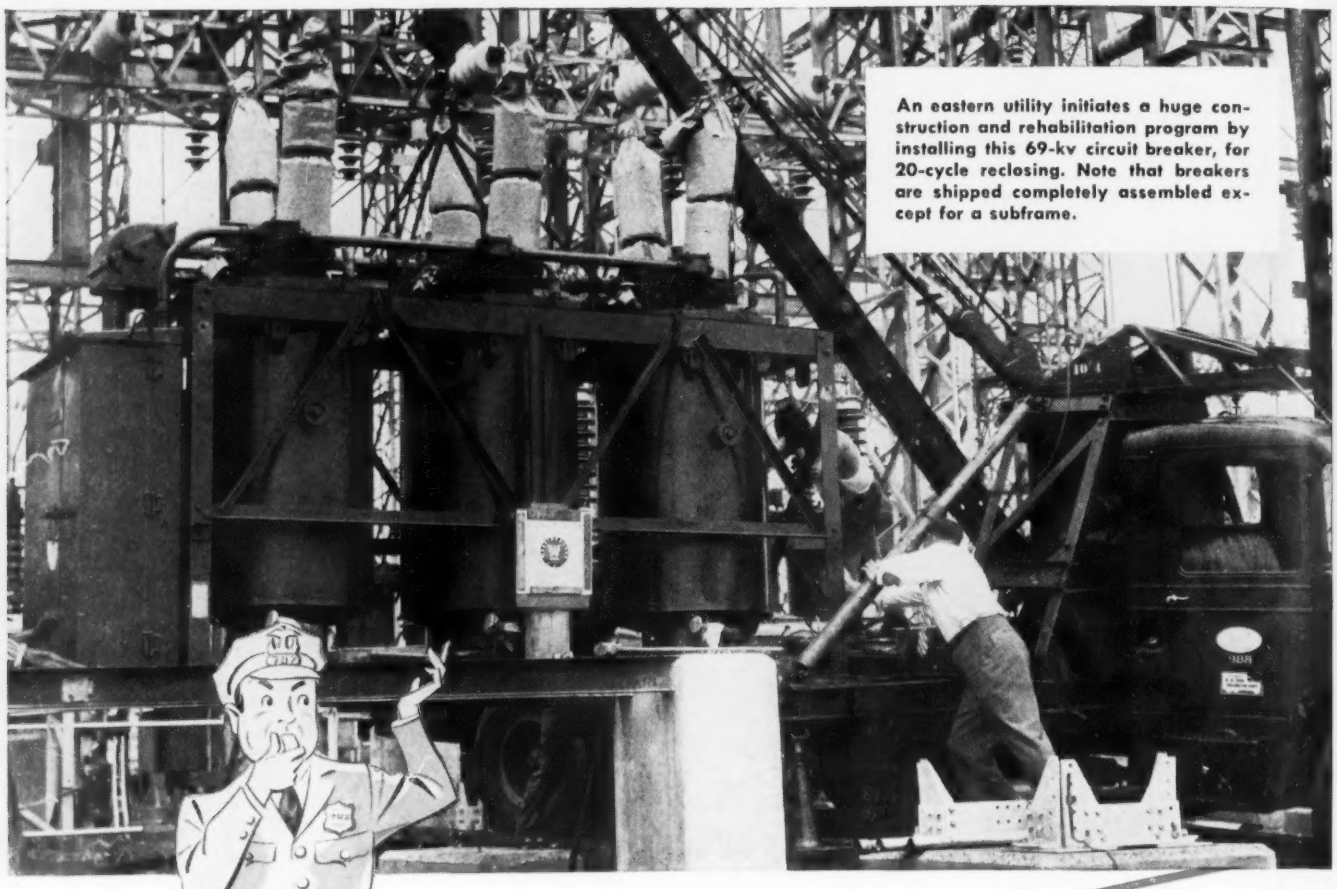
70 % to 90 % electrified, 1/1/45
line extensions practically completed 1/1/47

More than 90 % electrified, 1/1/45
line extensions practically completed

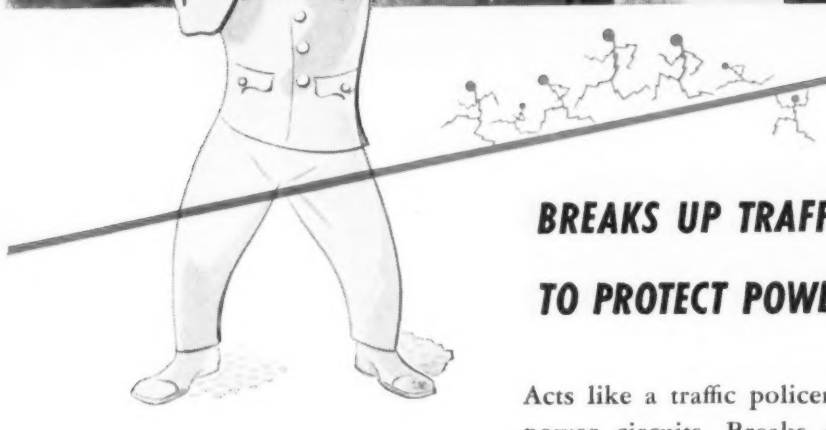
ON IN THE UNITED STATES

of Agriculture

EDISON ELECTRIC INSTITUTE



An eastern utility initiates a huge construction and rehabilitation program by installing this 69-kv circuit breaker, for 20-cycle reclosing. Note that breakers are shipped completely assembled except for a subframe.



BREAKS UP TRAFFIC JAMS QUICK

TO PROTECT POWER CIRCUITS.....

Acts like a traffic policeman when heavy currents get in a jam on power circuits. Breaks dangerously overloaded circuits in eight cycles. Westinghouse Outdoor, Frame-Mounted Oil Circuit Breakers police the system and improve service continuity.

They quench arcs quickly in exclusive "De-ion" Grids. High-speed magnetic action sweeps arc products from path of the arc. The combined action speedily deionizes arc zone . . . reduces fault clearance time, contact burning and oil deterioration, with resultant lower maintenance costs.

All parts are accessible for easy inspection or servicing. Even lowering and raising oil-filled tanks is a one-man operation with a windlass-type tank lifter.

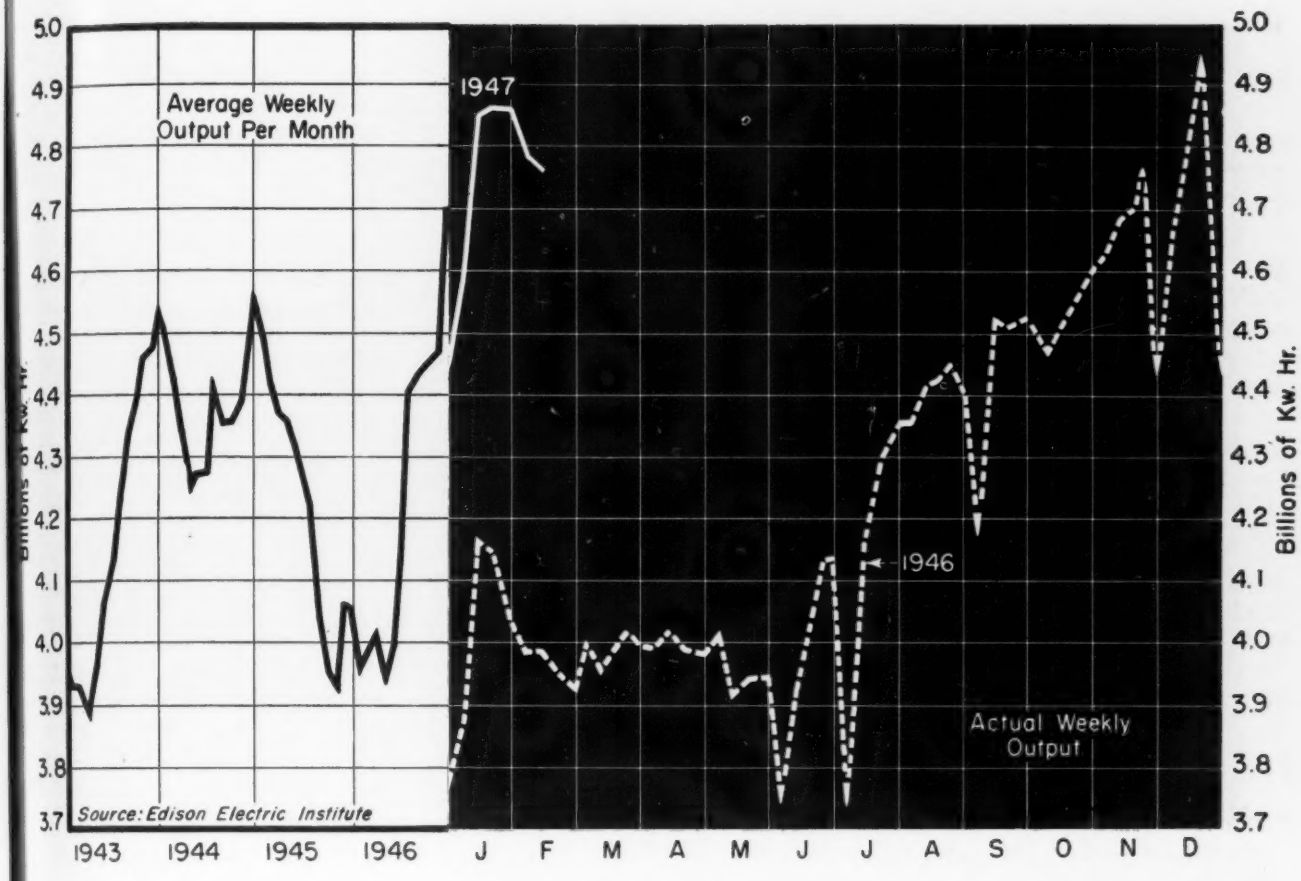
Frame-Mounted, "De-ion" Grid Oil Circuit Breakers are thoroughly tested in the Westinghouse High-power Laboratory before shipment. They are factory-assembled with condenser bushings and contacts in place to simplify installation. For complete details, write for Booklet B-3686. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-60644

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

OUTDOOR, FRAME-MOUNTED
OIL CIRCUIT BREAKERS

15 to 69 kv • 600 to 4000 amperes • 500,000 to 1,500,000 kva



Utility Commercial Power Sales Criticized by Buyer

Infrared heating, materials handling, and lighting techniques were coupled with selling techniques and some criticism of utility power selling, during the one-day meeting of the Great Lakes Power Club at Chicago last week. Predictions of an early return of the need for more active selling in commercial and industrial fields were followed by suggestions that knowledge of use possibilities is the best sales approach.

Commercial customers have not had as much help in planning use of electric appliances as they should have, in the opinion of one representative customer. J. H. Malone, The Walgreen Co., questioned the commercial promotion in comparison with cooking schools and other aids for residence users. He criticized the difference in commercial and residence rates but praised the consideration that has been given to their store plans in some cities.

Load building may not be a major incentive in analysis of materials handling for many industrial plants, but increased power may be the by-product if production increases result from such surveys. C. F. Kells, Electric Industrial Truck Association, said that batch methods of moving materials are still most widely used and will continue where continuous conveyors are not applicable on a man to man basis.

P. H. Goodell, Trumbull Electric Mfg. Co., presented design data for application of infrared heating ovens to utilize both the radiant and convection heat sources. He said that by observing five essential factors, heating cycles can be shortened and operating costs reduced. His charts were offered as an aid for power salesmen in assisting their customers in oven layouts.

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Quits Selling Appliances

To make available more appliances to dealers in its territory, South Carolina Power Co. has discontinued the sale of all electric and gas appliances. The utility will continue its dealer coordination program and its appliance repair department. Engineers will also be available to aid retailers with commercial and industrial installations.

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Wages Raised 5c an Hour

The Ohio Power Co. has increased wages of its employees in three counties, Tuscarawas, Coshocton, and Guernsey, by 5 cents an hour. The local head of the Utility Workers Union, C.I.O., said the increase will put the workers on a par with others in the state.

Electric Output Curve Dips

The electric output curve moved downward during the week ended February 15, 1947, according to figures released by the Edison Electric Institute.

The amount of electrical energy distributed by the light and power industry during the week amounted to 4,778,234,000 kw.-hr., comparing with 4,801,179,000 kw.-hr. during the preceding week. During the week ended February 16, 1946, the amount of electrical energy distributed totaled 3,948,620,000 kw.-hr., this year's figure representing an increase of 21.0 percent.

Weekly Output, Millions Kw.-Hr.

1947		1946		1945	
Feb. 15	4,778	Feb. 16	3,949	Feb. 17	4,472
Feb. 8	4,801	Feb. 9	3,983	Feb. 10	4,505
Feb. 1	4,777	Feb. 2	3,983	Feb. 3	4,539
Jan. 25	4,856	Jan. 26	4,034	Jan. 27	4,577
Jan. 18	4,857	Jan. 19	4,145	Jan. 20	4,588
Jan. 11	4,853	Jan. 12	4,163	Jan. 13	4,614
Jan. 4	4,574	Jan. 5	3,865	Jan. 6	4,427
1946		**1945**		**1944**	
Dec. 28	4,442	Dec. 29	3,759	Dec. 30	4,226
Dec. 21	4,940	Dec. 22	4,239	Dec. 23	4,617
Dec. 14	4,778	Dec. 15	4,154	Dec. 16	4,563
Dec. 7	4,673	Dec. 8	4,097	Dec. 9	4,538
Nov. 30	4,448	Dec. 1	4,043	Dec. 2	4,524

Percent Change from Previous Year

	Feb. 15	Feb. 8	Feb. 1
New England	+12.8	+12.6	+11.1
Mid-Atlantic	+13.6	+12.4	+ 9.4
Central Industrial	+29.3	+30.3	+29.4
West Central	+16.7	+14.7	+13.7
Southern States	+24.1	+22.5	+21.8
Rocky Mountain	+ 7.0	+ 8.0	+ 9.0
Pacific Coast	+19.4	+19.1	+22.8
Total United States	+21.0	+20.5	+19.9

Proctor Electric Plans for 1947 Built on Industry Interdependence Theme

Taking note of the National Electric Manufacturers Association "Declaration of Electrical Interdependence," Proctor Electric Co., in its 1947 planning is not only recognizing these truths but is building its program from that base. The Declaration as approved and signed at a NEMA meeting in December 1944 recognized the need of cooperation of all phases of the industry. This appliance manufacturer is carrying the theme through in a program entitled "Proctor Invites You Into a Partnership."

$1,000,000 Advertising Program

The manufacturer is supporting the program with a $1,000,000 advertising program as well as distributor and dealer aids. It is reported as the first campaign of this scope ever attempted by a manufacturer of small appliances.

Paul Coolidge, Proctor New York district manager, in outlining the program stated it is being undertaken now while appliances are short to determine "who our partners really are." "Every manufacturer wants and needs distributors and dealers who will cooperate with nationally planned programs," he continued, "and this is an opportune time to find out who these people really are. They are our partners and can be counted on to actively advance electrical living when the going gets tough."

He outlined the duties and responsibilities of each segment of the industry. The manufacturer is to continue research and development to provide a quality product and to promote this nationally; the distributor, to assist and promote within his area and to distribute appliances on fair and equitable basis; and the dealer to continue to use "any and all means to keep sold ahead."

That last point is a healthy one, Coolidge continued, "it keeps dealer pressure on the distributor and distributor pressure on the manufacturers." We are going to do every thing possible to keep this pressure in that direction rather than see it reversed. "It's good business for all," he continued, "it means demand is greater than production and results in a low stock, rapid turnover of appliance." At present appliances are moving as fast as completed but, he added, production is coming right along.

In spite of shortages, Proctor completed 94 percent of its planned 1946 iron production, he continued, and this was 22 percent of the industry total. Toasters were somewhat lower, Mr. Coolidge added, 50 percent of expected output which was 20 percent of the industry total. Production is running at the highest rate in the company history.

He stated that a material change had occurred in the quality appliance market. "With the increased income of the factory or production worker, this group has come into this market and materially outnumbers the professional group."

In discussing dealers, he stated that 4.4 percent are super or key accounts, 17.9 percent are volume accounts, and 77.7 are display or average accounts. The first two groups do 71.2 percent of the total business and the third do 28.8 percent.

Mr. Coolidge concluded by saying: "All three types of dealer, as well as distributor and appliance manufacturer will gain tremendously by using this program. We have the tools and the techniques and by interdependent cooperation, more goods will be sold, more happy customers will be on the utility's lines, and more people will enjoy electrical living."

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Bridgeport Brass to Operate New Copper, Brass Unit

Noranda Copper & Brass, Ltd., has been formed by the Bridgeport (Conn.) Brass Co. and a Canadian company, Noranda Mines, Ltd., Montreal, is already in operation. This new company is controlled financially by Noranda and operated by the Bridgeport company. Officers of Noranda Copper & Brass, Ltd., are president, Herman W. Steinkraus; vice-president in charge of operations, M. W. Bachelor; and A. R. Zender, vice-president in charge of sales. The three are officials of the Bridgeport Brass Co. J. Y. Murdoch, president of Noranda Mines, is chairman of the board of the new company.

The Canadian plant is adjacent to two other Noranda subsidiaries: Canadian Copper Refiners, Ltd., and the

SALES GET ENGINEERING—An intensive course based on the design and installation of germicidal equipment was given Tru-Air Ultraviolet Products Co.'s field engineers recently in Los Angeles by J. David Gladstone, company chief engineer and sales manager. Those in the group were, standing l. to r., Leo Greenwald, R. T. Bennett, C. C. Mathews, Jr., E. A. Nickel, and seated, Martin Fisher, Leland Prince, Mr. Gladstone, Clyde Allen, and Howard Jorgensen

rod mill of Canada Wire & Cable Co., Ltd. This proximity to a supply of copper at the head of tidewater navigation is pointed out as a distinct advantage. Noranda Copper & Brass, Ltd., will make a complete line of copper and brass mill products.

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Landers, Frary & Clark Expands Appliance Line

Distribution of a new line of appliances as well as redesigned models of the company's former products will begin soon, Landers, Frary & Clark has made known. These include a new electric blanket, a new bantam range, regular size kitchen ranges, tank and upright models of vacuum cleaners, washers, toasters, irons and ironers. Shipments for all items except the bantam range are expected to begin in March. The small range will begin to appear during April.

The company has expended $4,000,000 in expanding production facilities, it was made known. Provided there are no strikes or other major interruptions, Landers expects 1947 production to be 200 to 250 percent above 1946. The company's production in 1946 exceeded that of 1941 by 10 percent.

H. M. Parsons, vice-president, stated that there will be eight models of Universal ranges with all the latest automatic and convenience features. The bantam unit, he said, is a complete range, usable on a 115-volt circuit, has a maximum demand of 1650 watts, is 22½x14x42-in. in size, will roast a 22-lb. turkey, and is thermostatically controlled.

The new washers will incorporate controlled speed washing to accommodate the more delicate fabrics. The wringers have a new stop-control which will stop both wringer rolls as a result of "the mere tug of a ribbon," E. L. Farquharson, sales manager of the home laundry division, reported. As an adjunct to the washers, the company will have a two-speed deluxe table top-ironer and a portable ironer. The company's new electric blanket will contain six safety thermostats to prevent any overheating. The new pop-up toaster will be equipped with a device which will allow the housewife to examine the toast at any time without interrupting the flow of current.

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Moves to New Plant

Announcement has been made by the Hallicrafters Co., Chicago, that it has moved to its new plant at 4401 West Fifth Ave., Chicago 24, Ill.

China Cites U.S. Companies for On-The-Job Training

U. S. industries which gave on-the-job training to Chinese sent to this country during the war received the personal thanks of Chiang Kai-shek for "a contribution of far greater value than you perhaps realize toward helping us solve our vast reconstruction program."

The messages, which were printed on scrolls bearing the Generalissimo's "chop", were presented to an official of each firm by the Chinese Ambassador, Dr. V. K. Wellington Koo, at a dinner given by China Institute in America at the University Club, New York.

Among the electrical companies receiving the scrolls were: Allis-Chalmers Mfg. Co., American Telephone & Telegraph Co., Anaconda Copper Mining Co., Automatic Electric Co., Consolidated Edison Co. of New York, Thomas

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Wiring Devices Shipments Total $18,574,000 in June

Seventy-nine plants in the wiring devices and supplies industry, representing approximately 85 percent of the activity of the entire industry, shipped products valued at $18,574,000, and employed 31,584 persons during June, 1946. They consumed 71,086 short tons of carbon and alloy steel during the second quarter of 1946.

June shipments by the industry included wiring devices and supplies valued at $14,951,000 and other products (mainly electrical machinery and equipment) valued at $3,623,000. Total wiring devices and supplies shipments of plants amounted to $19,999,000.

Of this total, plants in other than wiring devices and supplies industry accounted for $5,048,000 according to the Department of Commerce release.

Wiring Devices and Supplies Shipped by The Wiring Devices and Supplies Industry and by Other Industries . . . June 1946

INDUSTRY	Wiring Devices and Supplies, Total: Number of Plants*	Wiring Devices and Supplies, Total: Shipments June, 1946 ($1,000)	Pole Line Hardware and Insulators: Number of Plants	Pole Line Hardware and Insulators: Shipments June, 1946 ($1,000)	Electric Wiring Devices and Conduits: Number of Plants	Electric Wiring Devices and Conduits: Shipments June, 1946 ($1,000)
TOTAL†	143	19,999	27	4,836	123	15,163‡
Shipped by wiring devices and supplies industry	79	14,951	20	4,307	64	10,644
Shipped by other industries, total	64	5,048	7	529	59	4,519
Nonferrous metal finished products industries	8	175	..	.....	8	175
Insulated wire and cable industry	4	2,330	..	.....	4	2,330
Other electric machinery and equipment industries					23	1,010
Iron and steel finished products industries	52	2,543		529	7	175
Machinery, except electrical, ind					9	200
All other industries					8	629

** Excludes duplication in count of plants shipping more than one product*
† Based on a special survey covering the first quarter 1946, it is estimated that reported shipments represent about 85 percent of the total shipments from all plants for each of the classes of products shown
‡ Revised

Shipments and Unfilled Orders of The Wiring Devices and Supplies Industry, By Product . . . June 1946

PRODUCT	Number of Plants Reporting	Shipments of the Industry June, 1946 ($1,000)	Estimated Unfilled Orders of the Industry on June 30, 1946 ($1,000)
TOTAL	79*	18,574†	142,000
Wiring devices and supplies, total	79*	14,951	117,000
Pole line hardware and insulators	20	4,307	38,000
Electric wiring devices and conduits	64	10,644	79,000
Other products, total	xx	3,623	25,000
Iron and steel finished products	14	311	2,000
Nonferrous metal finished products	8	500	3,000
Fuses	7	250	3,000
Switchgear, panelboards, switch boards, switches, circuit breakers, etc.	9	671	5,000
Insulated wire and cable	4	515	4,000
Other electrical machinery and equipment	13	592	4,000
Machinery, except electrical	10	476	3,000
All other products	14	308	1,000

** Excludes duplication in count of plants shipping more than one product*
† Revised after publication in Facts for Industry Series 50-3-27

A. Edison, Inc., Electric Bond & Share Corp., General Cable Corp., General Electric Co., General Motors Corp., B. F. Goodrich Co., Kennecott Copper Corp., Lincoln Electric Co., Phelps Dodge Corp., Philco Corp., Radio Corp. of America, Sylvania Electric Products, Inc., Union Carbide and Carbon Corp., U. S. Rubber Co., Western Electric Co., Inc., Westinghouse Electric Corp. and Worthington Pump & Machinery Corp.

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Square D Co. Gets Loan

The Square D Co. has obtained a loan of $1,500,000 from the National Bank of Detroit to replenish working capital. The loan will mature from February 1, 1948, to August 1, 1949. The company also reported the purchase of the remainder of the capital stock of the Square D Co. of Canada. Ltd., making the Canadian unit wholly owned.

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Export Controls Lifted

Synthetic rubber, varnished cotton tape, muslin and cambric for electrical insulation, and motors smaller than one-eighth horsepower were among the 50 commodities on which the Department of Commerce lifted export restrictions.

Copper Purchases High; OMR Stock Pile Depleted

The copper consuming industries rushed purchases and deliveries of copper during January and caused a new high in these transactions. Deliveries during the month totaled 143,692 tons, the Copper Institute reports. This pressure for supplies of the red metal reflects the growing apprehension of the fabricator in the rapid dwindling government stock pile.

Of the 143,692 tons shipped, approximately 59,000 tons were released by the Office of Metals Reserve, this virtually draining available government stocks. However, it is believed that small quantities will be available from this source for release through March, and that, at that time, the stock pile will be depleted. These small quantities which will be made available during the first quarter are believed to be the copper which will come from that contracted just before the government withdrew from the copper-buying business last year.

While the trade awaits tariff discussions, there was no indication of any large forthcoming private importations of foreign ore. The prevailing opinion in the trade this week was that Congress may temporarily suspend the four-cent duty. However, it will be sometime before Congress can act and until that time passes it is believed that importations of copper will not be heavy.

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Manufacturers Make Sales Assignments

Electrical manufacturing companies have recently made the following appointments to their sales staffs:

WESTON ELECTRICAL INSTRUMENT CORP., Newark, N. J., has appointed Curtis H. Stout, 1808 Beechwood Road, Little Rock, as its sales representative for the territory consisting of Arkansas, western Tennessee, northern Mississippi and northern Louisiana. In addition to representing the Weston corporation, Mr. Stout will also handle a coordinated group of electrical accounts throughout the area. A. R. Hough, who has been manager of government and utility sales for the company, has been named to succeed Arthur L. Pollard as manufacturer's representative with headquarters at 15 Nokomis Circle, Knoxville, Tenn. Mr. Pollard has announced his retirement as a manufacturer's representative.

MCGRAW ELECTRIC CO., Clark Water Heater Division, has appointed Lee G. Johns district sales manager for the western states area. Mr. Johns has had more than 16 years' experience in the utility merchandising field.

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Leases Joshua Hendy Plant

Operation of the Sunnyvale, Calif., plant of the Joshua Hendy Iron Works will be assumed by Westinghouse Electric Corp. about March 1, according to information released by John A. McCone, president of Joshua Hendy, and Harry F. Boe, vice-president of the Westinghouse manufacturing and repair division.

The plant encompasses 57 acres and, excluding the main manufacturing units, will be the largest of 37 manufacturing and repair plants which Westinghouse operates. The plant is being taken over under terms of a ten-year lease with option to purchase.

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ASA Lists 864 Standards

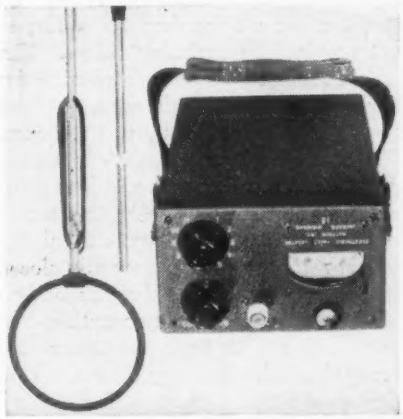
A list of 864 standards approved for national use by industry has been made public by the American Standards Association. The list, which includes many standards developed under war procedure and now approved for peacetime use, will be made available to interested trade, technical and governmental bodies and individuals without charge. Included are definitions of technical terms, specifications for materials and other materials, methods of work, and methods of testing finished products.

COOPERATIVE THINKERS—Electrical manufacturers' personnel at the 14th annual conference of the Doble Engineering Co. at Boston January 20-24, where progress in insulation design, testing and applications were discussed in detail. L. to r., front row, H. B. Ashenden (Allis-Chalmers); P. L. Bellaschi (Westinghouse); C. J. Miller, Jr., and T. F. Brandt (Ohio Brass); H. T. Lingal and H. L. Cole (Westinghouse). Rear arrow, l. to r., G. E. Janson, P. L. Taylor and R. J. Neagle (Allis-Chalmers); L. Wetherill (General Electric); G. W. O'Keeffe, (Allis-Chalmers); J. E. Clem (General Electric); V. F. Christen (Moloney Electric); Lindslay Ellms (Ohio Brass); and J. B. Hodtum (Allis-Chalmers)

NEW EQUIPMENT

Compact, Lightweight Fault Locator Developed

A COMPACT, lightweight, field instrument designed expressly to assist in locating non-visible ground faults on primary overhead distribution lines has been developed by Raytron, Inc., 407 North Jackson St., Jackson, Mich. The equipment consists of a tuned detector equipped with an illuminated meter, and a loop antenna which can be mounted on a car or carried by hand. The units weigh 9¼ lb. and 5 lb. respectively and are usable under all field conditions, the manufacturer reports.



Methods for using the equipment are described in a booklet, "The Raytron Way," available from the manufacturer, and the methods may be applied to either delta-connected or multigrounded neutral lines. In brief, this method consists of energizing the faulted circuit from its normal power source through a 15-kva. capacitor. This capacitor serves to "break down" the fault and set up a limited current flowing to its location, and to emphasize the 300-cycle component of this current. Since the detector part of the locator is tuned to 300 cycles, the instrument responds to the capacitor current. The faulted circuit may then be followed by car at distances of 100 yards or more from the lines, and the instrument will show at intersections or lateral taps which way to drive to reach the fault, it is reported. The signal will, in most cases, drop off sharply after passing the fault, and thus indicate its location.

The instrument has also been used on power secondary networks, particularly where a number of customers are fed from a single transformer bank. It also may be applied on underground cable work, provided the user is skilled in the usage of tracing current methods on buried cable.

The instrument will normally be supplied tuned to 60 and 300 cycles depending upon a switch position, and special tuning frequencies accurate to 1 percent can also be furnished. In some industrial applications it has been desirable to tune the locator to a frequency differing from 60 cycles or its harmonics to avoid interference from normal power service, and to use a special frequency generator to energize the faulted circuit.

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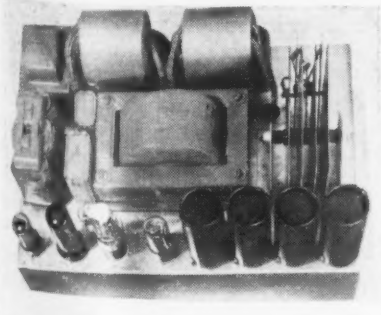
Voltage Regulating Units Have Battery Stability

REGULATED d.c. voltages at currents and stabilities comparable with batteries are now possible through a new line of voltage regulation units, called Nobatrons, Sorensen & Company, Inc., 375 Fairfield Avenue, Stamford, Conn., developers, announce.



The units, available in six standard models, operate on a 95-125 volt, a.c. source of 50 to 60 cycles and provide amperages of 5, 10 or 15 with output voltages of 6, 12 or 28 respectively. Regulation accuracy of one half of 1 percent, maximum ripple voltage (rms.) of 1 percent and recovery time of one-fifth of a second are reported.

Among the more important uses reported are in d.c. ammeter calibration in experimental, standardization and quality control laboratories, in photographic studios for furnishing power to light sources, in battery operated relays, in supplying current to filaments of d.c. amplifiers, etc. Control features include an "on-off" switch, a voltage adjustment, a control circuit fuse and a pilot light. Models are available either for panel mounting or encased in a cabinet with a gray wrinkle finish.

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Machine Facilitates Print Production

A NEW MODEL 91 B W printer-developer which is reported to facilitate print production has been announced by the Charles Bruning Co., Inc., 4754 Montrose Ave., Chicago 41, Ill. It develops and prints light, regular or card-weight paper prints which may be black or color on white background, black or color line paper prints on green-tinted background, transparent paper prints, as well as cloth or film prints. The rate of production is controllable and has a top speed of 30 ft. per minute, it is reported.

The feed board provides 13 sq. ft. of space. The sensitized medium and original copy are drawn into the machine by vacuum feed. Unit is controlled by "on and off" push buttons in motor and heater circuits. A speed control knob with a calibrated dial enables the operator to change to any desired speed within the range of the unit, it is reported. A light shield control knob is said to permit the operator to reduce the light exposure up to 50 percent. Light distribution is over a 46-in. wide area for printing on stock up to 42 in. wide.

Standard unit is designed to operate

on 200- to 235-volt, 60-cycle. single-phase circuits. It has a maximum demand of 35 amp. for cooling, drive and separator motors. A special unit for use on 25 cycles is also available.

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Cable Slitting Tool Cuts Up to 1⅝-In. O.D.

A NEW Lightning Cable Slitting Tool for use on rubber, plastic and braid covered conductors has been developed by Dudley F. Fasoldt & Son, Prospect Heights, Rensselaer, N. Y. The tool is reported to cut through the sheath without injury to the metallic conductor. It is hinged to facilitate center cuts.

It is reported that center cuts are made in 20 seconds and end cuts in 10 seconds. The tool is made in two sizes—No. 00 for outside diameters from ¼ to ¾ and No. 0 for ¾ to 1⅝ in.

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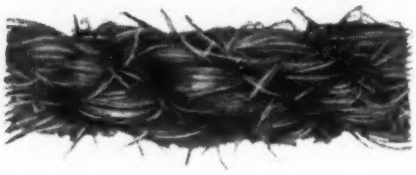
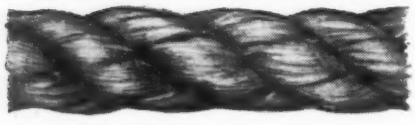
New Compound Preserves Wood, Rope and Fabric

COP-R-NAP, a solution of penetrating metal base napthenates that fills the fibres of wood or fabric and repels fungi or insects, has been announced by Osmose Wood Preserving Co. of America, Inc., 1437 Bailey Ave., Buffalo 12, N. Y. It is applied by dip,



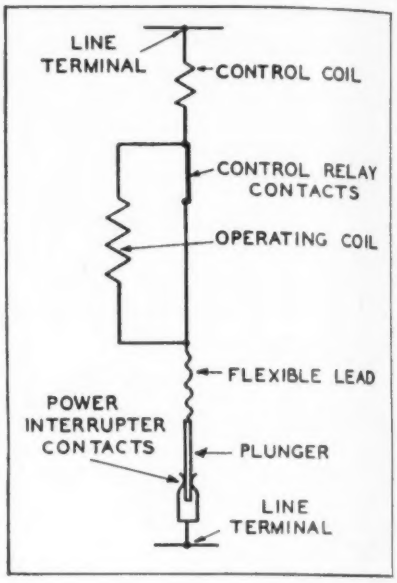


brush or spray and is reported to have a coverage of from 250 to 400 sq. ft. per gallon.

It is available in two types—green and clear. The green is recommended for wood and the clear for rope, fabric, cordage, etc. Materials to be treated should be dry when the preservative is applied. The two pieces of rope illustrated were exposed side by side, under accelerated tests, for a period of twelve weeks. The treated piece was still sound while the untreated crumbled, the company reported.

Circuit Recloser Has Inverse Time Characteristics

A NEW and improved type MB automatic circuit Recloser for use on circuits up to 12.5 kv. and with current ratings from 60 to 250 amp. has been announced by Railway & Industrial Engineering Co., Greensburg, Pa. The unit is described as essentially a reclosing oil circuit breaker having an inverse time current characteristic similar to that of a protective relay, and an automatic closing feature similar to that provided by reclosing relays. The unit is reported thereby to provide for fuse coordination. It is available with interrupting capacities up to 4,000 amp.



The Recloser is a pole-mounted, series-connected device in which the current normally flows from the line terminal through the operating coil of the control relay, across the normally closed control relay contacts, through a flexible lead to the power-interrupting contacts, and out through the other line terminal. The main operating coil, when energized, attracts a plunger and opens the power-interrupting contacts and is normally bypassed by the contacts of the control relay. The latter acts as an initiating relay and operates on overloads or short-circuit currents above the minimum setting.

For all current values above the setting of the control relay, the control contacts are reported opened in approximately ½ cycle, thereby forcing the overload current to flow through the main operating coil. As a result the plunger is attracted to the operating coil, opening the power-interrupting contacts, which, in turn, break the circuit. Due to the construction of the interrupting chamber, the total arcing time is ½ cycle, the manufacturer reports. As a result, on the first instantaneous opening, over-all speed of operation from the initiation of the fault until the circuit is opened is reported to be 1½ cycles. The recloser resets after a short time interval and if the fault is of a transient nature the circuit remains energized and the operating mechanism resets to its original position within 20 seconds. However, if the fault persists, further trips and reclosures occur at definite time intervals until either the circuit remains energized or the recloser is locked out.

The first tripping operation is reported by the manufacturer to be substantially instantaneous to prevent blowing of lateral or sectionalizing fuses. Subsequent time delay tripping operations can be either definite time, adjustable from 10 seconds downward, or inverse time, varying from approximately 10 seconds to ½ second. The recloser is provided with a screw driver adjustment so that lockout will occur after 3 trips and 2 reclosures or 4 trips and 3 reclosures. The unit is manually tripfree.

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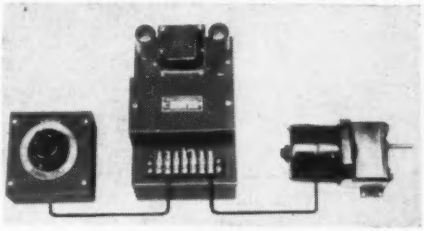
Industrial Thermometer Bulb Range Extended to 1,000° F.

A NEW TYPE of industrial thermometer bulb called Thermohm, which is fast acting and extends the range of the company's resistance thermometer recorders and controllers to temperatures as high as 1,000 deg. F., has been announced by the Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia 44, Pa. The company reports it as amply accurate for the more exacting industrial requirements and in speed to be matched only by the small pipe-type or fine wire couples.

Like any thermocouple or thermometer bulb, it can be used with protecting wells where required. The temperature coil is protected against contamination by moisture or gases. It has a corrosion-resisting stainless tube. Like the company's thermocouples and lower-temperature resistance thermometers, it is equipped with the standard universal head to facilitate installation and connection. Standard lengths are 6 and 12 in.

Remote Servo Control Handles Fractional, Integral Motors

A "PACKAGED" REMOTE servo control for use with fractional or integral horsepower motors has been announced by Yardeny Laboratories, Inc., 105 Chambers St., New York 7, N. Y. It operates on the principle of a self-balancing electronic bridge and consists of three basic elements—(1) the "master control" with a knob and calibrated dial for manual control or with a ¼-in. shaft for automatic control; (2) the "synchro-link electronic controller; and (3) the "load control potentiometer" geared to the motor or coupled to the load.



It is reported that any reversible motor can be used with the control. The unit is stated to be entirely autosynchronous and to cause the remotely located motor-driven shaft to take a position duplicating the setting of the master control.

In operation, the turning of the master control knob to a new setting causes an unbalance in the bridge circuit. The unbalance is detected by the electronic controller and closes the motor circuit and causes rotation in the proper direction. As soon as the load and the load control potentiometer approaches the new balance position, but before reaching it, the electronic controller cuts off the full power to the motor and feeds it short pulses until the motor inches into position.

The electronic controller contacts are rated to handle up to 15 amp., 110 v. a.c. non-inductive load; up to 10 amp., 220 v.a.c. non-inductive load; and motors up to ⅓₀ hp., 110 or 220 v.a.c. Motors of larger horsepower rating up to 35 hp. can be controlled by connecting the electronic controller to a standard magnetic reversing switch, the company reports.

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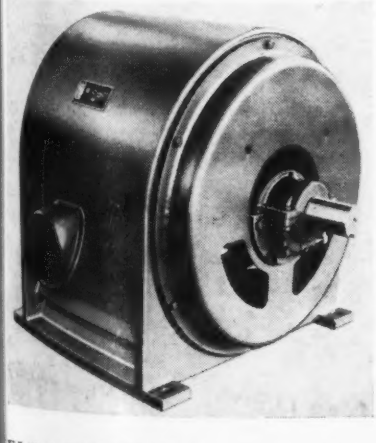
Motor Designed to Cut Maintenance Problems

A NEW STEEL fabricated motor, called Fabri-Steel, which the developers, Elliott Co., Ridgway, Pa., report was designed to simplify maintenance problems, has been announced. It is available in sizes from 150 to 1,000 hp. in standard voltage ratings. The motor is of the drip-proof, splashproof type, is forced ventilated, pipe or base ventilated, has sleeve or anti-friction bearings, and may be used in coupled or belted service.

Maintenance is reported to be simplified by end bearing and bell construction. It is stated that the bearings may be inspected by backing off four nuts, removing dowel pins and then lifting off the bearing cap. The bottom half of the bearing may then be removed by prying upon the shaft and rolling out the lower section of the bearing, the company adds. The manufacturer also states that the rotor can be guided through the opening in the end plate.

The stator is said not to contain a frame as usually visualized, but instead is a supporting structure built around the punchings. A building mandrel is first set up and the punchings are stacked over slot keys and pressed between end plates by hydraulic pressure. The cross members, consisting of steel angles, are then welded to the end plates to lock the core in place. At two or more points the weld is carried across the back of the punchings to act as a key against circumferential movement.



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Two Vacuum Cleaner Designs Provide for Cord Swallowing

TWO NEW design principles for solving the extension cord problem on vacuum cleaners have been announced by the Vacuum Cleaner Corp. of America, Philadelphia, Pa. Both design principles are based on the use of the company's automatic cord control reel.

The first is identified as the tangent type Cordomatic handle. This is a self-contained detachable handle unit adaptable to nearly all floor type vacuum cleaners, the manufacturer reports.

The second design principle is identified as the concealed type Cordomatic reel unit and handle combination. This design provides for invisibly mounting a Cordomatic reel unit entirely within the tail section of the cleaner head casing, the company states. In this type the cord pays off the reel through an opening in the cleaner casing, then through the pivotally mounted bail, up through the tubular handle, emerging through a cord outlet at the operator's finger tips.

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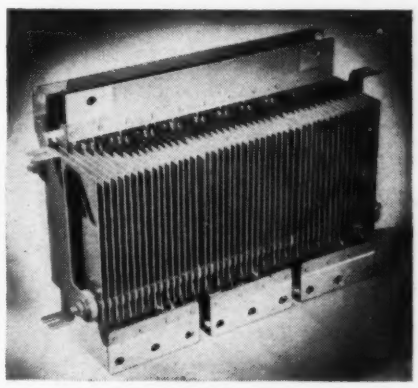
Selenium Rectifier Plate Arrangement Is Flexible

HEAVY POWER selenium rectifiers that are reported to have a flexibility of plate arrangement which makes them suitable for a wide variety of applications have been announced by Federal Telephone & Radio Corp., Newark, N. J.

A representative model is the illustrated 48-plate, three-phase, bridge-connected rectifier which furnishes 200 amp. at 30 volts d.c. with the plates connected in parallel. The same number of plates, differently arranged, can be made to produce other combinations of voltage and current. By connecting the plates of each arm in series, or in series-parallel, the output can be changed to 240 volts, 25 amp.; or 120 volts, 50 amp., for the operation of such apparatus as magnetic chucks, solenoids, motor relays and battery chargers.

The stack of the 48-plate rectifier, made up of plates 4½ in. by 6⅝ in., is 15 in. long and weighs 17¼ lb. The rectangular design of the plates provides an efficient space factor for group mounting and the stacks may be arranged either horizontally or vertically to meet space requirements and give unobstructed air circulation, the com-



pany reports. Forced air at a velocity of 200 ft. per minute provides adequate stack cooling at the higher current applications while self-cooled operation will provide 100 amp. continuously without overheating, it was reported.

Each plate has double center contact construction providing two current-pickup points on each side. The plates will withstand 26 volts a.c. back voltage, thereby increasing the permissible d.c. output voltage per plate, it was stated.

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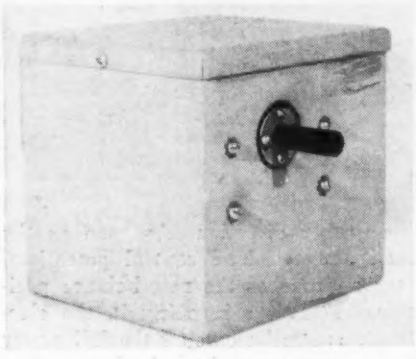
Electrical Valve Operator Develops 25 In.-Lb. Torque

A MOTOR-DRIVEN valve operator for use on 110/220-volt, 60-cycle circuits has been announced by Ralph D. Ernest, 408 Penobscot Bldg., Detroit 26, Mich. A similar unit is available for use on direct current. The unit makes one-half revolution for each position and is reported to develop 25 in.-lb. or



more of torque. The shaft is ½ in. in diameter and 1½ in. long. Limit switches may be provided for interlocking purposes according to individual needs. The sheet metal enclosure is 5¼ x 6 x 5½ in.

Cathode Ray Tube Makes Oscilloscope Usable on D.C.

A NEW 3-IN. oscilloscope capable of measuring direct current as well as alternating current has been introduced by Waterman Products Co., Inc., Emerald St., Philadelphia, Pa. The unit is portable, weighs 8¾ lb., and measures 11x7x9 in. Measurement of d.c. as well as a.c. is made possible through the development of a new cathode ray tube, the company reports.

Reported among the features included are push-pull amplifiers for horizontal and vertical deflection, intensity modulation amplifier, linear time sweep from 3 cycles to 50 kc., anti-astigmatic centering controls, trace expansion for detail observation, and attenuators for a.c. and d.c. The instrument chassis is insulated from the input circuits for safety purposes, the manufacturer reports.

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Four High Frequency Heating Units Developed

FOUR NEW equipment developments —a heat gun, a 30,000-cycle motor-generator type induction heating unit, a variable ratio transformer, and a 7½-kw. output, 3-megacycle induction heating unit—have been announced by the Tocco Division, Ohio Crankshaft Co., Cleveland, Ohio.

The heat gun is a portable inductor. It permits bringing the heat to the work instead of the work to the heat. It is reported as particularly adaptable to large assemblies where many spot heats are required or to short production runs where it is uneconomical to provide a special inductor coil for each part to be treated. The gun is built for operation with a standard 10,000-cycle motor-generator type induction heating unit and is controlled by a trigger switch.

The new 30,000-cycle MG type induction heating unit is reported to triple the previous high frequency limit of motor-generator type induction heating equipment. It is reported as being effective in the surface hardening of parts under ⅜ in. in diameter.

The variable ratio transformer is said to increase the adaptability of motor-generator type induction heating equipment. The company reports it can be made to match any size load, any size inductor coil by a change of leads. The new 7½-kw. unit is an electronic type induction heating device and operates at about 3 megacycles. The company reports that it is designed for use on very small diameter or very thin strip stock.